BTEC Assignment Brief

Qualification	Pearson BTEC International Level 3 Subsidiary Diploma in Construction and the Built Environment Pearson BTEC International Level 3 Foundation Diploma in Construction and the Built Environment Pearson BTEC International Level 3 Diploma in Construction and the Built Environment Pearson BTEC International Level 3 Extended Diploma in Construction and the Built Environment Pearson BTEC International Level 3 Diploma in Civil Engineering Pearson BTEC International Level 3 Extended Diploma in Construction and the Civil Engineering Pearson BTEC International Level 3 Diploma in Building Services Engineering Pearson BTEC International Level 3 Extended Diploma in Building Services Engineering
Unit number and title	Unit 14: Low Temperature Hot Water Systems in Building Services
Learning aim(s) (For NQF only)	**Learning Aim B: Undertake the design of a LTHW installation for a domestic property** **Learning Aim C: Develop a specification for materials, components and ancillary equipment for a domestic LTHW system**
Assignment title	**Assignment 2 – Designing a Central Heating System for a Terraced House**
Assessor	
Issue date	
Hand in deadline	

Vocational Scenario or Context	You are a technical apprentice with a building services consultancy practice. As part of your training your manager is wanting you to design a gas fired heating system for stored hot water and space heating by radiators for a new terraced house. See Figure 1 and Figure 2. The following data have also been provided: Room height 2.4m Design temperatures: External temperature -1^{0}c Living room 21^{0}c Kitchen/Diner 18^{0}c Bedroom 18^{0}c Hall/landing 18^{0}c Bathroom 22^{0}c Toilet 18^{0}c Air changes per hour: Bedroom 1.0 Living room 1.5 Hall/landing 1.5

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	Bathroom 2.0 Toilet 2.0 Kitchen/Diner 2.0 U Values (W/m2K): External wall 0.24 First floor ceiling 0.15 Ground floor 0.14 Windows/doors 1.40 Ground floor ceiling 0.00 Party wall 0.00 Allow a load of 2000 watts for the hot water
Task 1	Following your report on the factors that need to be considered in your design you now need to design the system for the terraced house in Figure 1 and Figure 2. Your company's quality procedures require that you produce a design file to support the design of the heating system for the terraced house. You should add the following information to the file: • The main pipework runs added to a copy of the plan of the house. The plan should also show the location of the boiler, stored hot water and other key components • Schematic drawing showing key components and the pipework connecting them (where the above plan is too small scale to clearly show these) • Calculations for the heat load for each radiator • Radiator positions to be shown on the plan • Calculation of the heat load of the boiler • Calculation for the sizing of the pipework
Checklist of evidence required	Your design files containing the design information and calculation for the heating installation for the terraced house. Calculations may be in neat handwriting.

Criteria covered by this task:	
Unit/Criteria reference	To achieve the criteria you must show that you are able to:
14/B.P2	Produce a pipework layout for a domestic situation that includes the positioning and requirements of all key components.
14/B.P3	Assess the required heat output for the emitters in each room for a domestic property.
14/B.P4	Assess the boiler output requirements for a given domestic property.
14/B.M2	Produce a detailed heating design that meets the needs of a given domestic property.
14/B.D2	Produce a comprehensive heating design that fully meets the needs of a given domestic property.

Task 2	Once the design has been completed you need to select a boiler, radiators for each room and the other materials and equipment required for the installation.

	Produce a schedule showing the quantities of the materials and equipment selected. Manufacturers' literature of the equipment selected should be included. (The distribution pipework and outlets for the hot water system should not be included in the schedule) A statement should be provided that supports your choice of equipment and materials. This should also identify any advantages or disadvantages of the choices made and why these were made in preference to alternatives.
Checklist of evidence required	A word processed schedule of equipment and materials, showing the quantities required. Copies of manufacturers' literature for the equipment included in the schedule. A word processed statement that justifies and evaluates the choices made in your schedule.

Criteria covered by this task:	
Unit/Criteria reference	To achieve the criteria you must show that you are able to:
14/C.P5	Select a boiler to meet the needs of a given domestic property.
14/C.P6	Produce schedules of materials and equipment that meet some of the needs of a given domestic property.
14/C.M3	Justify the selection of a boiler, materials and equipment that meets most of the needs of a given domestic property.
14/C.D3	Evaluate the selection of a boiler, materials and equipment that fully meets the needs of a given domestic property.

Sources of information to support you with this Assignment	Burberry, P, Environment and Services (Mitchells Building Series), (8th edition), Routledge, 2015, ISBN 9781138167780. This book explains principles of services installations and environmental considerations and is relevant to the content of this unit. Greeno, R, Building Services Handbook (8th edition), Routledge, 2015, ISBN 9781138805637. This book is a handbook covering all aspects of building services in a concise manner. McMullan R. Environmental Science in Building, 7th Edition Palgrave Macmillan, 2012 ISBN 9780230290808 The most recognised book which is considered a credible text regarding building science. Ray Ward, Domestic Central Heating Wiring Systems and Controls, 2 Edition Routledge, 2005, ISBN9780750664363 This book provides a comprehensive reference manual for hundreds of items of heating and control equipment. Journals

	Building Services Engineering Research & Technology (BSERT), Sage Publishing This is the CIBSE's quarterly journal containing useful research relevant to all aspects of building services engineering. http://journals.sagepub.com/home/bse P & HE Journal, Chartered Institute of Plumbing and Heating Engineers (CIPHE) This is the CIPHE online journal which covers a broad range of areas relating to plumbing and heating. http://www.ciphe.org.uk/professional-members/publications/ Websites http://www.cibse.org/ This is the website of Chartered Institute of Building Services Engineers (CIBSE) which is the professional body for building services engineers. The website contains information about the codes, products and industry updates. http://www.modbs.co.uk/ This is the website of Modern Building Services (MBS) covering a wide range of building services engineering sectors. Further Resources may be found at: www.edexcel.com/resources/Pages/default.aspx **Note to Tutors: This list of resources should be customised to reflect the resources available within the centre**
Other assessment materials attached to this Assignment Brief	*Figure 1 and Figure 2 - plans of the terraced house*